

CLAIMS

What is claimed is:

- 1 1. A method comprising:
2 applying a time delay to a signal sampled from an interference signal to
3 provide substantially broadband cancellation of the interference signal.
- 1 2. The method of claim 1, wherein providing substantially broadband
2 cancellation includes substantially matching an amplitude of the sampled signal
3 with an amplitude of the interference signal.
- 1 3. The method of claim 1, wherein providing substantially broadband
2 cancellation includes substantially matching an amplitude of the sampled signal
3 with an amplitude of the interference signal to within about a 0.1 db accuracy.
- 1 4. The method of claim 1, wherein the method further includes providing about
2 a 180° phase shift to the signal sampled from the interference signal.
- 1 5. The method of claim 4, wherein providing about a 180° phase shift to the
2 signal sampled from the interference signal includes providing about a 90° phase
3 shift upon sampling and providing about a 90° phase shift coupling the sampled
4 signal to a signal path receiving the interference signal.
- 1 6. The method of claim 1, wherein the method further includes generating the
2 interference signal as a signal from a transmitter through its associated antenna with
3 the substantially broadband cancellation of the interference signal applied to the
4 interference signal received by a second antenna associated with a receiver.
- 1 7. The method of claim 1, wherein the method further includes monitoring a
2 signal strength received from a signal path receiving the sampled signal and the

3 interference signal and adjusting the time delay to minimize the signal strength
4 received from the signal path.

1 8. The method of claim 1, wherein providing substantially broadband
2 cancellation includes providing substantially broadband cancellation to an
3 interference signal, where the interference signal propagates from a transmitting
4 antenna of a device to a receiving antenna of the device, the transmitting antenna
5 using a first wireless protocol and the receiving antenna using a second wireless
6 protocol.

1 9. A method comprising:
2 providing a time delay to a correction signal propagating from a first signal
3 path to a second signal path;
4 adjusting an amplitude of the correction signal; and
5 periodically resetting the time delay and adjusting the amplitude of the
6 correction signal to provide substantially broadband cancellation of an interference
7 signal propagating over an interference path between the first signal path and the
8 second signal path, the interference path separate from a primary path of the
9 correction signal.

1 10. The method of claim 9, wherein the method further includes sampling the
2 interference signal to generate the correction signal.

1 11. The method of claim 9, wherein periodically resetting the time delay and
2 adjusting the amplitude occurs during a time interval in which no communication
3 signals are being externally transmitted or received along the first signal path or the
4 second signal path.

1 12. The method of claim 9, wherein the method further includes providing an
2 initial time delay and an initial amplitude adjustment during a start-up process by a
3 iterative process that includes:

4 transmitting a test signal along the first signal path;
5 receiving a response signal associated with the test signal from the second
6 signal path, the response signal having a signal strength; and
7 adjusting the time delay and adjusting the amplitude to minimize the signal
8 strength.

1 13. An apparatus comprising:
2 a first signal path;
3 a second signal path;
4 an adjustable delay line to provide a time delay to a correction signal
5 propagating from the first signal path to the second signal path; and
6 a variable attenuator coupled to the adjustable delay line such that the
7 correction signal matches an interference signal propagating from the first signal
8 path to the second signal path to provide substantial broadband cancellation of the
9 interference signal.

1 14. The apparatus of claim 13, wherein the adjustable delay line includes one or
2 more microelectromechanical switches.

1 15. The apparatus of claim 13, wherein the adjustable delay line includes a
2 material whose permittivity can be changed to adjust the speed of propagation of the
3 correction signal.

1 16. The apparatus of claim 15, wherein the material is barium strontium titanate.

1 17. The apparatus of claim 13, further including a first tap to couple the
2 correction signal to a primary path from the first signal path to the adjustable delay.

1 18. The apparatus of claim 17, further including a second tap to couple the
2 primary path to the second signal path.

1 19. The apparatus of claim 13, further including a phase corrector coupled to the
2 adjustable delay line.

3 20. The apparatus of claim 19, further including a controller to manage the
4 variable attenuator, the adjustable delay line, and the phase corrector.

1 21. The apparatus of claim 13, wherein the first signal path includes a
2 transmitter and a first antenna, and the second signal path includes a receiver and a
3 second antenna.

1 22. The apparatus of claim 21, wherein the first signal path further includes a
2 transmission line coupled to the transmitter and a first cable having a fixed
3 propagation delay coupled to the first antenna.

1 23. The apparatus of claim 21, wherein the transmitter is a first transceiver that
2 uses a first wireless protocol and the receiver is a second transceiver that uses a
3 second wireless protocol.

1 24. A system comprising:
2 a processor;
3 a memory coupled to the processor;
4 a first signal path on which signals responsive to the processor are
5 transmitted;
6 a first antenna coupled to the first signal path to transmit the signals from the
7 first signal path;
8 a second signal path on which signals to provide a communication to the
9 processor are received;
10 an adjustable delay line to provide a time delay to a correction signal
11 propagating from the first signal path to the second signal path; and
12 a variable attenuator coupled to the adjustable delay line such that the
13 correction signal matches an interference signal propagating from the first signal

14 path to the second signal path to provide substantial broadband cancellation of the
15 interference signal.

1 25. The system of claim 24, wherein the first signal path includes a transmitter
2 to transmit a first signal using a first protocol and the second path includes a
3 receiver and a second antenna to receive a second signal using a second protocol.

1 26. The system of claim 24, further including a controller to manage the variable
2 attenuator and the adjustable delay line.

1 27. The system of claim 24, further including a first tap to couple the correction
2 signal to a primary path from the first signal path to the adjustable delay, and a
3 second tap to couple the primary path to the second signal path, wherein the first tap
4 and the second tap each provide about a 90° phase shift to the correction signal.

1 28. The system of claim 24, wherein the system further includes a data
2 transmitting module coupled to the first signal path collocated with a data receiving
3 module coupled to the second signal path.

1 29. The system of claim 24, wherein the system is a computer.

1 30. The system of claim 24, wherein the system is a laptop computer.